

## CLAIMS

What is claimed as our invention is:

1. A method for removing conjugated olefins from a composition comprising:  
    contacting the composition with a Diels-Alder dienophile to convert  
    conjugated olefins to a Diels-Alder adduct; and  
    arresting the Diels-Alder adduct.
2. The method of claim 1 further comprising arresting the Diels-Alder dienophile.
3. The method of claim 1 wherein the Diels-Alder adduct is arrested via a selectively permeable barrier.
4. The method of claim 3 wherein the selectively permeable barrier is a membrane.
5. The method of claim 1 wherein the Diels-Alder adduct is arrested via a phase differential.
6. The method of claim 5 wherein the Diels-Alder adduct is a solid and the composition is not a solid.
7. The method of claim 6 wherein the Diels-Alder dienophile comprises maleic anhydride, benzoquinone, or combinations thereof.
8. The method of claim 5 wherein the Diels-Alder adduct is a liquid and the composition is not a liquid.
9. The method of claim 3 wherein the selectively permeable barrier is disposed in a vessel.
10. The method of claim 9 wherein the selectively permeable barrier forms a removable container arresting the Diels-Alder adduct.
11. The method of claim 6 wherein the solids are disposed in a filter.

12. The method of claim 11 wherein the filter comprises alumina, activated carbon, or combinations thereof.
13. The method of claim 1 further comprising recovering a composition having a lower concentration of conjugated olefins.
14. The method of claim 13 wherein the recovered composition comprises less than or equal to about 80 parts per million by weight of conjugated olefins.
15. The method of claim 13 wherein the lower concentration of conjugated olefins is about 25 percent lower.
16. The method of claim 13 wherein the recovered composition comprises less than or equal to about 5 weight percent of Diels-Alder dienophile.
17. The method of claim 13 wherein the recovered composition comprises less than or equal to about 5 weight percent of Diels-Alder adduct.
18. A method comprising:
  - confining a Diels-Alder dienophile to a first side of a selectively permeable barrier wherein the barrier is more permeable to conjugated olefins and less permeable to Diels-Alder dienophile and Diels-Alder adduct; and
  - contacting a composition comprising mono-olefins and conjugated olefins with the Diels-Alder dienophile to form Diels-Alder adduct;
  - wherein the contacting reduces the concentration of conjugated olefins in the composition.
19. The method of claim 18 wherein the contacting further comprises exposing the composition to a second side of the barrier such that conjugated olefins permeate to the first side of the barrier.

20. The method of claim 19 wherein the contacting results in a lower concentration of conjugated olefins in the composition on the second side of the barrier.
21. The method of claim 20 wherein the Diels-Alder dienophile and Diels-Alder adduct are confined to the first side of the barrier.
22. A method for removing conjugated olefins from a composition comprising bubbling the composition through a liquid comprising Diels-Alder dienophile to form a liquid comprising Diels-Alder adduct.
23. A method for removing conjugated olefins from a non-solid composition comprising contacting the composition with a solid comprising Diels-Alder dienophile to form a solid comprising Diels-Alder adduct.